

- Panel PW-01 - Welcome to Potato World - *exterior panel, barrel mounted*

Welcome to Potato World! Come Discover the Amazing Story of the Humble Potato.

Explore the history of potato farming in New Brunswick through the equipment and technologies used.

Find out where the potato came from and where it is going. Discover the partnership between the farmer, science and industry, and what this means to the present and future of potato farming.

Prepare to be surprised – there is more to the potato than meets the “eye”.

- Panel PW-02 - Trevor Tuber and Pierrette Tubercule - *wall-mounted*

Trevor and Pierrette are the official spokes-spuds for Potato World. They are both Shepody potatoes, a world-famous New Brunswick potato variety. The Shepody was developed by the Agriculture Canada Potato Research Centre in Fredericton and introduced in 1979. It has become one of the most popular varieties for french fry production. Trevor and Pierrette will be your guides during your visit.

- Panel PW-03 – The Biology of a Tuber

Potatoes are the edible tubers of a plant from the nightshade family. Potato plants are vines that grow above the ground and tubers are the underground stems. As tubers grow and store food, they become thicker. The tuber is the portion of the potato plant that we eat.

The berry is a small green fruit containing 10 –200 seeds. Called True Seed, this is the material that potato breeders use.

The stem is the attachment point between the roots and the plant. Stems originate from the eyes on the potato’s surface and cannot produce new plants.

Stolons originate from underground nodes, or growing points, on the stem. The tuber forms at the tip of the growing stolon.

The potato plant has compound leaves and a perfect five-petal flower that contains both male and female flower parts. The flower colour can be white, purple, lilac, or violet depending on the variety of the potato.

Lenticels are tiny openings that allow air into the tuber.

The eyebrow is a leaf scar, which always faces the end of the potato with the most eyes.

The eye is the growing point for new plants. It sometimes has a distinctive colour.

- Panel PW-04 – The Origin of the Potato - *wall-mounted (map substrate)*

Cultivated potatoes were first developed from wild tubers that grew around Lake Titicaca, on the border between Peru and Bolivia. Tubers were easily harvested, stored and transported and they provided an ideal source of nutrition.

The native people that lived in that area of South America began cultivating tubers over 4000 years ago. They also found a way to dehydrate potatoes by allowing them to freeze at night and thaw during the day. The juice was pressed from the thawed potatoes each day, and the cycle was repeated several times. This freeze-dried product was called Chuno.

- Panel PW-05 – The Migration of the Potato - *wall-mounted (map substrate)*

Spanish explorers discovered the potato in the 1500's while searching for gold in South America. Conquistadors carried potatoes back to Spain aboard their ships. Potatoes became a common food at sea for Spanish sailors as it was soon discovered that eating potatoes prevented scurvy.

Potatoes adapted well to the European climate, but at first they were fed only to livestock. Some people wouldn't eat the potato because it was not mentioned in the Bible, and many thought the potato, as part of the nightshade family, was poisonous. Eventually, beginning mainly in France, the potato became an important and popular staple food. Irish peasant farmers in particular became very dependent on the potato as their primary food crop.

The potato was first introduced to North America when Irish immigrants settled in Londonderry, New Hampshire in 1719.

- Panel PW-06 - Feeding the World - *wall-mounted (map substrate)*

Today, potato farming worldwide is growing at an unprecedented rate. Potatoes are the fourth most important food crop after rice, wheat and maize, and almost 40% of the world's potatoes are grown in developing countries by small-scale farmers.

The potato is a food staple crop in more than 180 countries. China grows the most potatoes, with over 4 million acres, followed by Russia, Poland and the United States. In 2004, Canada ranked 13th in world potato production.

In the 2001-2002 crop years, New Brunswick had the second highest export of seed potatoes in Canada (behind Alberta) at 42,000 tonnes. The leading countries for New Brunswick seed potato exports are the United States, Mexico, Uruguay, Cuba, Venezuela and Guatemala.

- Panel PW-07 - Hand Tools - *wall-mounted*

Farming has always been labour intensive work. New Brunswick's forests challenged our pioneer farmers, who first had to clear the land before planting their crops. Farming was a family effort and everyone was involved.

From the beginning, farmers have dealt with many of the same realities that they face today – long days and a short season (120 days) for growing and harvesting. The difference is, they had to do much of the work by hand.

What began as subsistence farming eventually grew into an agricultural market. In the process, some tools and equipment were developed that are unique to New Brunswick, such as the potato barrel, potato basket and the bank potato house.

- Panel PW-08 - The Early Years

There is no record of potato farming in this province prior to the mid-1700's. During the late 1800's, winter woods workers from Carleton and Victoria counties found summer work in Maine on potato farms. They brought potatoes home and started their own family plots.

In New Brunswick, the major production of potatoes was centred in Carleton, Victoria and Madawaska counties. The first recorded commercial potato shipment was to a Bangor, Maine, company from a farm in Woodstock, NB. This cross-border shipping became commonplace over the next few years.

The railway ran through the Upper Saint John River Valley with potatoes being shipped by boxcar to Montreal. In order to keep the potatoes from freezing, a man was hired for the whole train to maintain the two (kerosene or stove oil) heaters per boxcar.

G.C. Cunningham is recognized as the father of the modern potato industry in New Brunswick. He was head of Plant Inspection for Agriculture Canada from 1914-1923. In 1915, he organized the first Potato Growers' Association and was instrumental in organizing the federal Seed Potato Certification Service.

- Panel PW-09 - Many Nations - *wall-mounted*

During the 1500's, many families came from France to settle and farm in Acadia (Nova Scotia). At the end of the Seven Years War, the settlers were expelled. Eventually they were allowed to return; many settled in New Brunswick, clearing land and planting their crops.

Scottish settlers moved into Kent and Gloucester counties from 1750-1780. They cultivated potatoes for personal use and also for sale, shipping their crop from ports along the East Coast during the summer months. Later, from 1873-1874, a Scotch Colony was established by settlers from Northwest Scotland.

The Irish came to New Brunswick to escape the potato famine that struck Ireland from 1845 to 1847. Many settled in Johnville, building communities and farms with only an axe and a strong back. The conditions were extremely harsh but, the land was cleared, crops grown and harvested. Their long struggle was worthwhile.

In Denmark during the late 1800's and early 1900's, news of prosperity and security in a new land drew settlers to New Brunswick. One of their settlements, New Denmark, was established in 1872. Danes were not used to the huge forests they encountered, and they

didn't know what to do with the trees. They buried many of them in order to create farmland, planting potatoes and grain between the stumps.

- Panel PW-10 - The Plow - *wall-mounted*

The plow is a basic farming tool, used to cut and turn over sod. It loosens and aerates the soil, making it more suitable for cultivation.

Whether foot-powered or horse-drawn, the plow has remained almost the same for centuries. The moldboard plow that turns over the plowed sod, was invented in the eleventh century A.D.

Several variations of the plow were used in New Brunswick during the early days. The single furrow plow, the simplest, was drawn by one or two horses and guided by the farmer who walked behind. This was a slow process. The gangplow, pulled by two or three horses, had coulters (disks) to cut sod, two ploughshares and moldboards working simultaneously. This type of plow was much more efficient. Having all of these tools incorporated in one machine reduced the work the farmer needed to prepare the field.

- Panel PW-11 - Horsepower & Growth - *barrel mounted*

Dependence on horsepower and other beasts of burden radically changed potato farming. Crop farmers became livestock farmers as well. Farm needs also grew to include corrals, barns and feed storage, but the benefits far outweighed the costs.

The increased use of horsepower, along with improved techniques, made potato farming less labour intensive. Farmers could produce more crops with fewer workers; more work could be accomplished in a shorter time, leading to increased yields and the effective use of more land. This led to changes in the approach to potato farming, and to the size of the farms.

During the last half of the 20th century, the trend in potato farming has been towards bigger, and fewer, farms. In the 1940's, if you walked a few kilometers down a country road you might pass dozens of farms. Today, on that same road, you may pass only one or two – maybe none. This is perhaps the most noticeable difference, resulting directly from ongoing changes in technology, technique, and society.

The move away from the traditional family farm during the post-WWII period has accelerated during the past 15 years, but one practice remains. From the 1920's to today, schools close during harvest-time so that schoolchildren can be hired to help with the harvest. They are paid a set amount for each barrel of potatoes picked and make an important contribution to the success of the industry.

- Panel PW-12 - The Harrow - *wall-mounted*

Harrows were pulled by horses or other beasts of burden until tractors came into wider use in the 1940's.

There are three kinds of harrows:

A disk harrow has a series of rolling, saucer-shaped disks at an angle along one or more of its axles.

A spike tooth harrow has straight teeth that form sharp spikes.

A spring tooth harrow has c-shaped steel teeth attached to metal bars.

The spring tooth harrow followed by the spike tooth harrow prepared the land for the seeding operation.

- Panel PW-13 – The Planters

Four types of planters are used in potato farming. The seed potato is cut into pieces called sets, each with one or more eyes from which the potato plant will grow. The sets are dropped into the ground at intervals, and then covered with a hiller or horse hoe.

The Pick Planter pick sets out of a hopper with a sharp metal pick. An advantage is that set size is not important, but this type of planter can spread disease easily due to wounds, and it needs to be disinfected frequently.

The Cup-Type Planter uses a series of cups to place the sets in the soil. Consistent set size is important with this planter.

Assist-feed Planters mechanically feed the sets onto a rotating disk before being dropped in the soil.

The Tuber Unit Planter, developed in the 1930's, is still in use today. Tuber Unit Planters are used to plant high class seed, Elite classes. Three methods can be used to prepare the seed: A mechanical set cutter can be used. This type of planter can also have 4 seats for 4 people to manually cut the sets, or it can be done by physically carrying the seed potatoes in bags and hand cutting and planting the sets.

Using tuber unit planting, each piece - or set - is planted separately but consecutively, meaning that seed pieces from the same tuber are planted one after another in a row. This makes it easier to detect virus-diseased plants and remove the whole tuber (all of the sets) from the field.

- Panel PW-14 - Mechanization & Progress - *barrel mounted*

The past sixty to seventy years have seen a steady move toward mechanization in the potato industry. Farmers still face the challenges of long days and hard work, but equipment and approaches have continued to evolve as new technologies and techniques are developed.

Mechanization of farming first began with the addition of drive-assist and motor-driven components to horse-drawn equipment. Eventually, the horse was replaced by the tractor. This gave the farmer increased capacity to pull larger, more powerful and more mechanized equipment. Mechanization also gave farmers new tasks to master, from operating machinery to maintaining equipment, to guarding against hazards of the job. Tractors and other farm machinery can cause serious injury and farmers must be constantly alert on the job as the industry continues to evolve.

Changes in farming methods and approaches, fostered by mechanized equipment, have contributed to and followed the accelerated growth in the industry needed to serve the processing plants and the world market.

- Panel PW-15 - Today's Farmer - *barrel mounted*

Crop farmers usually work from sunrise to sunset and days off are rare during the planting, growing, and harvesting seasons. They are responsible for the tilling, planting, fertilizing, cultivating, spraying, and harvesting of their crop. During the rest of the year, farmers must make sure the crops are properly packaged, stored, and marketed. They plan for the next season's crops, and repair machinery.

Growing up on a family farm provides important experience, but to be successful today farmers need both formal education and work experience. Potato farming is much more than crops. It encompasses the product, producers, distributors and consumers, each depending on the other for survival.

Potato farmers need an in-depth knowledge and understanding of the potato plant itself. Climate, soil structure, altitude, latitude, length of growing season are all variables that can either be manipulated or responded to in order to ensure a top-quality potato and a high-yielding potato crop.

Modern potato farming is also financially complex. The ever-increasing cost of land, machinery, fuel, fertilizers, feed and seed means that today's farmer must make many business decisions. They must also compete for the best market for their crops, and spend more time in offices and at computers managing the many aspects of their businesses.

- Panel PW-16 - Potato Professionals - *wall-mounted*

The business of potato farming is not confined to the growing fields. Many professionals in the potato industry work together to ensure the development and maintenance of a healthy crop.

***The Variety Screening and Multiplication Project*** was established in the 1970's at the Anders Jensen farm in New Denmark. Its role was to evaluate how well new potato varieties adapted to New Brunswick conditions, and studies were conducted relating to seed spacing and fertility. This project was concluded in 1997.

***The Agriculture and Agri-Food Canada Potato Research Centre*** is located just outside of Fredericton, NB. It operates a potato breeding substation at Benton, near Woodstock,

NB and develops new cultivars and technologies for the production, handling, and management of potatoes. The Centre maintains a national repository of potato gene resources, conducts research on soil management and conservation, and coordinates the activities of the AAFC Potato Research Network.

***The Potato Development Centre*** was established in 2000 to "strengthen the primary and value-added growth, competitiveness, innovation, and sustainability of the NB potato sector." Located in Wicklow, NB, in the center of the potato belt, the Centre provides specialized service to more than 750 potato growers and their counterparts throughout the province. The Centre also operates ***the Plant Propagation Centre*** in Fredericton and ***the Bon Accord Elite Seed Potato Centre*** in Bon Accord. ***The Potato Quality Testing Laboratory*** provides quality testing and analysis of tuber sucrose and glucose levels as well as processing chip and fry color.

***The Plant Propagation Centre*** was established in 1983 and expanded in 1990. It includes a modern tissue culture laboratory and 4 separate growth rooms, and produces over 300,000 potato propagules annually. The ***Centre*** produces Nuclear Stock plantlets and microtubers which become the basis for New Brunswick's seed potato industry, and supplies a full range of varieties to customers across North America. The ***Plant Propagation Centre*** also houses the ***Canadian Potato Variety Repository***, an extensive collection of varieties and seedlings.

***The Bon Accord Elite Seed Potato Centre***, established in 1964/1965, is located in Victoria County. The ***Centre*** provides top quality, high-class seed to the New Brunswick potato industry; conducts ongoing, practical research on seed potato physiology, management and storage; and produces a complete range of varieties, enabling New Brunswick seed growers to rapidly respond to changing market demands. At present, the primary seed classes sold are Nuclear and Elite I.

***The New Brunswick Potato Shippers' Association*** was formed in 1948. Its goal was to secure better rail transport rates and to address other common interests and concerns.

***The New Brunswick Seed Potato Growers' Association*** was formed in 1977 to liaise between the New Brunswick seed potato growers and the government and other organizations and industry associates. They also support seminars and other extension events and promote the use of NB seed potatoes.

**The NB Seed Potato Export Association** works closely with farmers, shippers, etc. to assist in export of New Brunswick seed potatoes to countries such as Cuba, United States and Russia.

**The NB Potato Agency/Potatoes New Brunswick** was formed in 1979 with offices in Centreville and Grand Falls, New Brunswick. **PNB** addresses the common concerns of the New Brunswick potato producers, serves as a liaison between government and other industry organizations, and promotes the use of New Brunswick potatoes. **PNB** also represents growers during negotiations and operates the **Agricultural Certification Services**, a grower-owned, disease-testing laboratory and research facility in Fredericton, New Brunswick.

- Panel PW-17 - Seed Potato Production - *wall-mounted*

New Brunswick is an international leader in seed potato production, and is Canada's largest exporter of seed potatoes shipping top-quality seed around the world for over 75 years.

New Brunswick's productive soils and northern climate make it uniquely suited to seed potato production. Temperate summer days, cool nights and ample rainfall provide near-ideal growing conditions. New Brunswick is also completely free of many of the world's most serious potato pathogens. Winter snow, ice and severe cold help eliminate pests and weeds; the rugged, forested surroundings provide natural isolation to our seed production areas.

Every seed potato originates from disease-tested tissue cultured stock. The New Brunswick potato industry, working closely with Agriculture and Agri-Food Canada's Potato Research Centre in Fredericton, uses a stringent multiplication system to ensure only high-quality seed tubers are produced.

#### Step 1 - Multiplication of disease-free nuclear stock for field production

Shoot tips are taken from selected healthy tubers and grown in cultures to produce plantlets. Nodal cuttings are made to multiply the plantlets, and these cuttings are

transferred to the greenhouse or screenhouse. The resulting tubers are collected and tested to ensure that they are disease free. These are known as Pre-Elite Class of Seed.

## Step 2 - Limited Generation program

Each variety has a maximum of 7 years of production. This “flush-through” system provides a quick exit for crops that are high in disease. Each variety is planted as Pre-Elite and must meet inspection standards to progress to the next class. If the standards are not met, the crop will drop to a lower class. Every year, new disease-free tubers are introduced into the system as the “old” tubers are declassified.

Step 3 - Post-harvest testing includes mandatory testing for BRR (nation wide - zero tolerance), and mandatory testing for Potato Leafroll Virus and Potato Virus Y.

Step 4 - Final inspection is carried out during packaging and shipping. Tags are issued only after all inspection requirements are met.

- Panel PW-18 - Table Potatoes - *wall-mounted*

New Brunswick has a long history of supplying top-quality table potatoes around the world, and a reputation for unsurpassed quality, consistent supply and dependable delivery. Our farmers always start with certified or higher classes of seed potatoes and manage their crops to optimize yield and quality.

The industry is built on generations of experience, sound farming practices and use of the latest technology to efficiently harvest and store the crop. Careful handling and vigilant grading ensure that a premium product is maintained and shipped.

Our modern seed multiplication system allows us to rapidly introduce new varieties and respond to changing consumer demands. New Brunswick offers commercial volumes of a wide range of traditional and newly-released varieties to satisfy every market. All table potatoes are inspected by the Canadian Food Inspection Agency, and our up-to-date grading, washing and packing lines allow us to precisely meet our clients' needs.

- Panel PW-19 – A Challenging Environment - *barrel mounted*

To protect and ensure soil quality, farmers rotate their crops, planting potatoes every third year in the same field. Potatoes are usually rotated with cereal and forage crops. Crop rotation improves product quality and marketable yields by decreasing soil compaction, improving soil organic matter and fertility, rooting depth, weed and disease control.

Soil erosion is another challenge facing farmers. As good topsoil is eroded by wind, water and tilling, the soil that is left has lower nutrient levels, doesn't drain as well, and compacts or hardens. All this makes it difficult for potato plants to thrive and produce high-quality potatoes.

One method used to reduce erosion is to grow a winter cover crop. The crop is planted in the fall, in time for it to form good growth to protect the soil over the late fall and winter. Other methods focus on controlling water flow. To prevent an easy flow for water, leading to soil erosion, farmers use cross-slope farming which creates a series of dams to redirect and slow the flow of water. Soil control structures such as terraces and grassed waterways can divert water flow, and surface inlets allow water to flow away from the field. To protect fields from wind erosion, hedgerows or treed windbreaks are used.

The tilling time, frequency and equipment used are important. Spring tillage is less likely to lead to soil erosion than fall tillage, and the fewer passes you make over a field the less the soil is compacted. Too much tilling and the movement of machinery during harvesting can cause soil to compact, may make it harder for water to get into the soil and can lead to erosion of soil as the water runs off.

- Panel PW-20 – The Holmesville Series Soil - *wall-mounted*

The Holmesville Series Soil was proclaimed the Provincial Soil on February 13, 1997. It is the most prevalent soil type in New Brunswick, especially conducive to growing good quality potatoes.

The mix or soil recipe consists of a sandy loam to loamy soil with less than 20 per cent clay, and 15-30 per cent coarse fragments. This is a fertile soil that provides high yields in both agriculture and forest crops, holds moisture and is consistent without irrigation. Holmesville is located in Carleton County near Florenceville.

- Panel PW-21 – Potato Processing - *barrel mounted*

Potato processing began thousands of years ago in the mountainous area of Peru where farmers found a way to dehydrate or “freeze-dry” their potatoes. It has grown into a complex modern industry producing a wide variety of dried, frozen, canned and specialty products. Over 50% of the potatoes grown in Canada are used for processing, mostly for french fries, but also for chips and dehydration. The potato is the most important vegetable crop in Canada.

Potatoes for processing are selected based on variety, colour, fry quality and shape. The potato chip industry requires a white, round potato variety such as Atlantic or Snowden. The french fry industry requires a white, long potato variety, such as Russet Burbank or Shepody. Both require potatoes with high specific gravity (lots of dry matter content or starch) and low levels of sugars. Misshapen tubers or ones with growth cracks or hollow heart are not used as they do not produce a high-quality product.

One of the newest potato processes uses potato granules, dehydrated into single potato cells. Produced from fresh whole product (small, cull, and off-grade potatoes) that can't be used for other products, granules taste and feel like real potatoes when mixed with water. Granules are used in instant mashed potatoes, soup mixes, pet foods, baby foods, snack foods, frozen entrees and for institutional food services, giving farmers a new market for otherwise unmarketable potatoes. Flakes, also dehydrated potato portions, are produced from the waste product of a processing facility, like a chip plant.

- Panel PW-22 - Potato Nutrition - *wall mounted*

The potato is very nutritious, producing more food energy per acre, in the same time period, than any other crop except sugar cane and sugar beets. The potato also produces more total protein per acre than any other crop except soybeans. This combination of high energy and high protein is a powerful factor in terms of human nutrition.

When counting calories, a medium-size potato contains approximately 100 calories compared to 300 calories for a hamburger, 420 for a piece of chocolate cake, 200 for a doughnut and 225 calories for a cup of cooked rice.

Potatoes eaten with the skin are a rich source of vitamin C, potassium, low in sodium, and a good source of fiber. This combination improves digestion and helps manage your body weight. It may help decrease the risk of colon cancer, heart disease, high blood pressure and stroke.

- Panel PW-23 - Health of the Crop - *barrel mounted*

In the 19th century, farmers did not know what caused disease in potatoes. When the blight hit Ireland in the 1840's, spreading to other parts of the world, they had no idea how to fight it. By the early twentieth century however, many forms of defense against fungus and pests had been developed. Sprayers and dusters distributed chemical deterrents to control blight and viruses, and farmers developed a bug picker that knocked bugs off potato plants into a tray. It was also discovered that many potato diseases could be reduced or prevented by rotating their crops in the potato fields.

**Late Blight** is a serious fungal disease that was responsible for the Great Potato Famine in Ireland from 1845-1847. This disease has the potential to devastate commercial potato crops, and can be found both in commercial potato operations and in private gardens. The disease affects many crops including the potato, tomato, pepper, as well as various weeds. Symptoms usually appear first on older leaves soon after flowering, following warm and wet or humid weather. **Early Blight**, another potato disease, is caused by a fungus which overwinters in plant debris, soil, and in other members of the same plant family, such as peppers and tomatoes. **Verticillium Wilt** is another fungal disease; its symptoms appear late in the season. **Blackleg** is a bacterial disease which causes the potato plant foliage to yellow and die early.

To manage blight, and any other threats to your potato crop, begin applying treatments as soon as you spot symptoms, and only plant resistant cultivars recommended by your Potato Specialists. High soil fertility will help ensure the health of your crop as well.

- Panel PW-24 - Farming goes High-Tech - *barrel mounted*

Agriculture today is high-tech. The tractor has evolved into an air-conditioned data processing centre, complete with a phone and a satellite-driven Global Positioning System (GPS) device. GPS technology uses signals from satellites to pinpoint locations on the earth. This information can be used to create a detailed map of the potato field,

marking the locations of soil sensors and other monitors. This allows the farmer to accurately determine where changes in watering, fertilization and/or weed control are necessary.

At home, the farmer is connected via computer to banks and worldwide markets. There is a never-ending stream of weather data, crop reports and information, and 24-hour access to the Geographic Information System (GIS), a computer-based tool for mapping and analyzing things that exist and events that happen on earth. Many farmers use computers, spreadsheets, and GIS software to analyze data and create maps that show soil type, pH, nutrient levels, and land features such as hills.

Farmers also use information from the National Aeronautics and Space Administration's (NASA) Earth Observing System, a series of satellites that make observations of the climate, land surface, biosphere, atmosphere, and oceans. These satellites help farmers examine their fields for crop damage and map soil conditions, as well as look for changes in the environment that could affect their crop.

- Panel PW-25 - Precision Farming - *barrel mounted*

Precision farming is a combination of high technology and reliable information. Precision farming allows farmers to divide their fields into several units and treat each one depending on its needs. Using data from the GPS receiver, a computer determines where the spreader is on the map, and orders the controller on the applicator to make any necessary adjustments. Crop yield can be optimized by applying the right type and amount of nutrients in the right locations; weeds, insects and diseases can be controlled by applying pesticides at different rates across the field. This also reduces the risk of environmental damage to the soil, streams or water table by treating only the unit that requires protection instead of the entire field.

Another component of precision farming is yield mapping. To determine the low and high yielding areas of their fields, farmers install electronic load cells on their harvesters. The load cells record the weight of the potatoes as they travel across the conveyor. Potato weight, travel speed, and windrow spacing are used to calculate yield per acre. This value is then matched with the correct longitude and latitude obtained from the GPS system to create a yield map showing how the potato crop yield changes in that field.

Remote Sensing is another emerging technology used in precision farming. This involves the analysis of images or pictures taken from airplanes or satellites to determine land use, drainage patterns, and other information that will be important to the long and short-term planning for the use of the land.

- Panel PW-26 - Potato Varieties - *wall-mounted*

Many potato farmers can tell what variety of potatoes is growing in a field just by looking at the colour of the flowers or the shape of the leaves. Varieties are also distinguished by stem characteristics, the presence or absence of a wing or tiny hairs, the tuber shape, eye and sprout colour, skin and flesh colour.

There are approximately 3,000 varieties of potatoes, but only about 100 are grown on a regular basis. Each variety has its own unique colour, taste, shape and texture, from the nutty-flavored White Rose to the shiny and earthy Purple Peruvian.

Russets, such as the Burbank, Centennial, and Norgold have a brown skin and white flesh. Their floury texture when cooked makes them ideal for baking and a good choice for mashed potatoes.

Long Whites, such as the White Rose are oval with a thin, light tan skin and tiny “eyes”. They are a good all-purpose potato, especially for boiling and pan-frying.

Round Whites, such as the Katahdin, Superior, and Chippewa are round, with a smooth, light tan skin; ideal for scalloped potatoes, baking and potato salads.

Round Reds, such as the La Rouge, Red La Soda, and Red Pontiac have rosy red skin with white flesh. They are generally round or oblong, and are good for boiling, baking, and slicing into potato salads.

Yellow Flesh, such as Yukon Gold and Yellow Finn have a mild buttery texture, and are good for baking and mashing.

Blue and Purple, such as the Purple Peruvian and All Blue, have flesh that ranges in hue from dark blue or lavender to white. They can be microwaved, steamed or baked.

- Panel PW-27 - Developing New Potato Varieties - *barrel mounted*

The National Potato Breeding program at the Agriculture and Agri-Food Canada Research Centre in Fredericton, NB has developed several potato varieties, including the Keswick, Belleisle, Fundy, Jemseg, and Shepody.

New potato varieties are the end-product of specific engineering. A number of steps are involved in creating a new variety and approximately 15 years are required from the time an original cross is made until the final evaluation is completed.

Step 1 – Choose two parent potato varieties with desirable traits or characteristics such as disease resistance, tuber shape, quality, yield, cooking quality.

Step 2 - Collect and transfer pollen from the male parent to the female parent. After several weeks, fruits or seed balls (true seed) resembling small green tomatoes form on the female plant.

Step 3 - Collect the true seed balls, dry the seeds, and plant in the greenhouse or directly in the field. Each seed that germinates has the potential of becoming a new variety.

Step 4 - Tubers with different shapes and sizes, and different skin and flesh colours are produced. Discard those showing negative traits and repeat the process until only tubers that meet market requirements are left (this may take several years).

Step 5 - Test the selected tubers for unseen traits, plant and harvest. Discard tubers with negative traits and continue this process until there are only a few selections remaining that meet all the criteria.

Step 6 - Test these tubers for storability, fry quality, palatability, colour, disease tolerance, etc.

Step 7 - Plant tubers in regional adaptation trials to see how they produce in different climates.

Step 8 - Finally, plant tubers in grower trials to evaluate adaptability in field-scale production.

Tubers that meet all criteria and have passed all testing will undergo a registration process with Agriculture Canada. They must meet the standards before they become available for commercial seed use.

- Panel PW-28 – The Latest Research - *barrel mounted*

The humble potato is big business in Canada. From seed potatoes to frozen french fries, we move tonnes of product to farms and tables all over the world. You probably haven't thought about that too much, but the scientists at Agriculture and Agri-Food Canada have. The potato is a key crop for Canada's domestic and export markets, and researchers are doing their best to help Canada remain the supplier of choice for quality potatoes.

Potato research in Canada assists the industry to be on the cutting edge internationally. The Potato Research Centre in Fredericton develops new cultivars and technologies for the production, handling, and management of potatoes. The Crops and Livestock Research Centre in Charlottetown provides scientific knowledge, and develops integrated crop and livestock systems with a focus on the environment. The Lethbridge Research Centre in Alberta develops innovative technologies to enhance crop production sustainability and competitiveness, and cultivars which are adapted to the Canadian prairies. In addition to these key players, research projects also take place at other centres across the country.

One of the latest fields of research is biotechnology. With the potato for example, genes are introduced into an existing potato variety to improve resistance to disease, insects, or stress. Biotechnology has been used to improve resistance to the Colorado Potato Beetle in the Russet Burbank variety, and the Shepody variety has been improved with genes to make it more resistant to viruses.

- Label 29 - Potato Facts, Do's and Don'ts - *wall-mounted*

The potato selection at your local grocery store will vary throughout the year. During harvest time, between August and October, new potatoes are packaged and shipped to retailers. Through the winter, spring and following summer, potatoes are shipped from storage.

DO – carefully inspect your potatoes before purchasing. Choose firm, smooth potatoes and avoid those with wrinkled or wilted skins.

DO – store potatoes in a paper bag or sack, in a cool, dark, dry and airy place. This helps stop sprouting and greening, and slows shrivelling.

DO – store potatoes with an apple. It helps stop sprouting.

DO – eat the skin; this is where most of the vitamins are found.

DO NOT – eat anything green from a potato. The potato is part of the nightshade family and the leaves and stem are poisonous. If you find green skin on a potato, peel it away.

DO NOT – drop your potatoes; they bruise easily.

DO NOT – store potatoes in the fridge. The starch turns to reducing sugars, glucose and fructose and produces a sweet taste.

DO NOT – store potatoes in direct sunlight. They will go green and taste bitter.

DO NOT – freeze leftover potatoes. The potato is 80 percent water. When frozen, this water separates from the starch and nutrients and causes the reheated potato dish to be watery.

- Panel 30 – Your Home Garden - *wall-mounted*

Nearly every home gardener wants to include potatoes in their vegetable garden. Potatoes grow best in a moist, acidic soil, fertilized with well-composted manure before planting.

There are many popular varieties to choose from when planning your home garden. Some, like the Eramosa and Jemseg mature early. Other early to mid-season varieties include AC Belmont, AC Chaleur, Irish Cobbler, Superior, Norland, Kennebec and Keswick. For late season harvests, choose the Belleisle, Green Mountain, Purple Chief, or Yukon Gold.

Store-bought potatoes have usually been sprayed to prevent sprouting, so for best results purchase your favorite variety from a seed store. You should do this about two weeks before planting and remove the seed potatoes from the bag. Place them in light at 50-60°F and they will form short, strong, green sprouts.

To plant a 100 foot row, you will need about 5-8 pounds of seed potatoes. Cut the seed so that one or two eyes are on the surface, leaving some of the flesh to provide energy for

the plant. Plant the seed with the eyes facing upward, approximately 2 weeks before the last killing frost of the spring.

Keep weeds to a minimum, but do not hoe too deeply near the plants. The roots and tubers are relatively shallow. When the potato plants are 4-6 inches high, the earth should be hoed around them to form a hill to prevent sunburn and injury by fall frosts.

Remove and destroy insects as soon as they appear. Sprays may be used, but hand picking the pests is effective and safe. Also, watch carefully for late and early blight and other diseases, and treat as required.

If left in the ground too long, the tubers can become too large and develop hollow heart. You should cut off the vines a few inches above the soil surface as soon as your potatoes are the desired size, and about three weeks before harvest to allow the skins to become firm enough for harvesting and storing.

Store your potatoes covered or in a dark area to prevent them from turning green due to the formation of chlorophyll. Potatoes that have turned green should not be eaten. They will have a bitter taste and can give you stomach problems.